

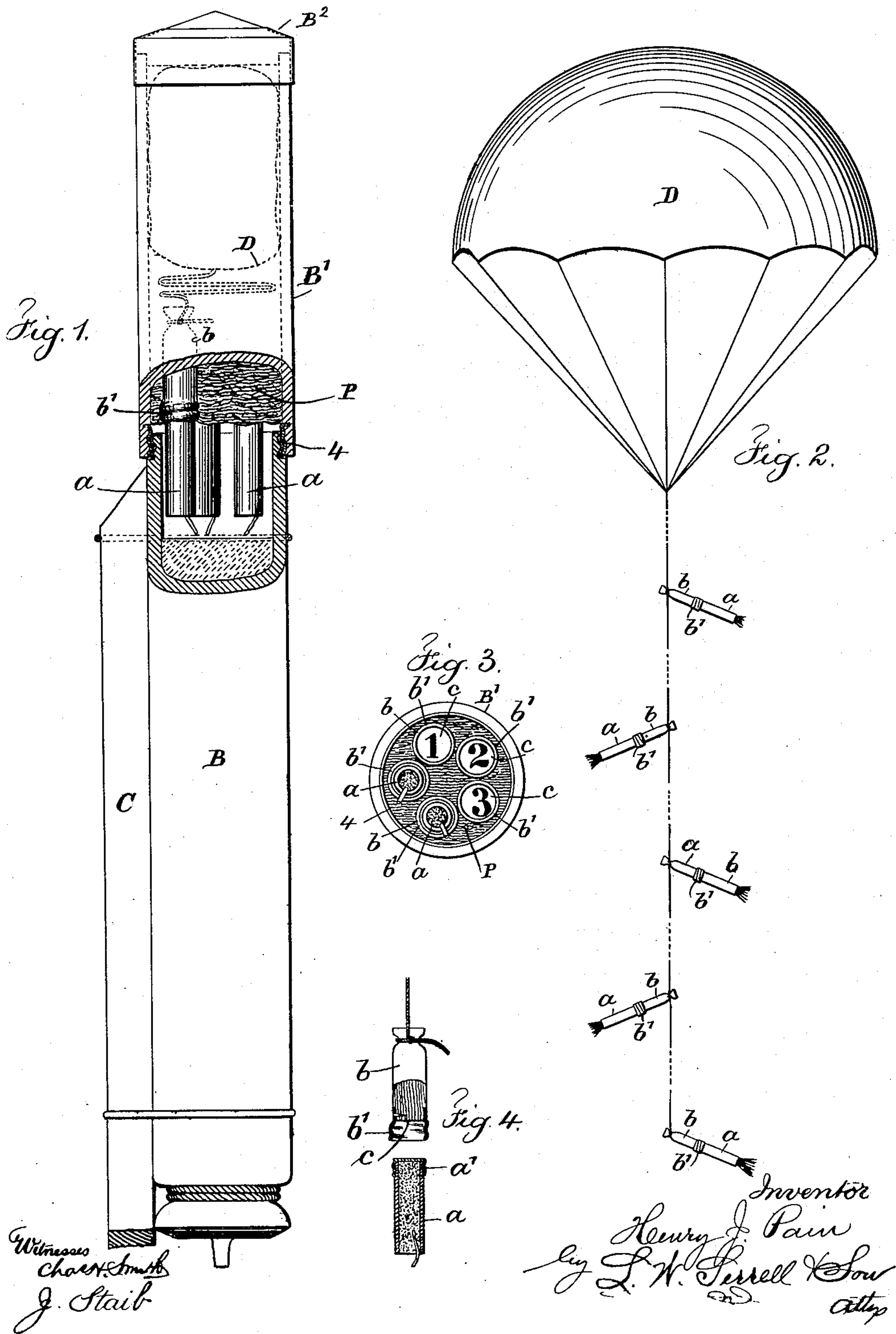
No. 617,539.

Patented Jan. 10, 1899.

H. J. PAIN.
PYROTECHNIC SIGNAL.

(Application filed Feb. 7, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

HENRY J. PAIN, OF NEW YORK, N. Y.

PYROTECHNIC SIGNAL.

SPECIFICATION forming part of Letters Patent No. 617,539, dated January 10, 1899.

Application filed February 7, 1898. Serial No. 669,350. (No model.)

To all whom it may concern:

Be it known that I, HENRY JOHN PAIN, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Pyrotechnic Signals, of which the following is a specification.

My invention relates to pyrotechnic devices adapted for use interchangeably for signaling purposes on land and sea, especially in the military, naval, and merchant-marine service.

In carrying out my invention, and in combination with a parachute and strings therefrom and a device, such as a rocket, for raising the parachute in air, I employ stems, each connected at one end to the parachute-string and having a socket upon the other end. I also provide shells of suitable material filled with compounds for colored fires, and these shells are adapted to slip into the sockets of the stems. These shells are preferably wrapped in paper corresponding in color to the colored-fire compound in the shell, and they are connected with the respective sockets, so that when the parachute is projected into the air from the rocket or other elevating device the colored fires will be ignited and burn suspended from the parachute, and so indicate by the order of the color the desired or prearranged signals. The sockets should be numbered in succession, No. 1 being usually at the end of the string distant from the parachute. I prefer to construct the shells to screw into the sockets, as they are thus more securely held in place.

In carrying out this invention I prefer to employ a rocket having a removable screw-head, into which the parachute and the stems and their sockets are packed in such positions that they are easily accessible for shells of colored-fire compound to be inserted, removed, or rearranged, and then the rocket-head is screwed upon the rocket-case ready for use.

The present improvement allows the colored-fire shells to be kept separate from the rockets and to be inserted in the desired order immediately before use, thus avoiding the expense of a stock of completed signal-rockets and making it possible with a few rockets and a stock of shells of colored-fire com-

pound to give any desired signals readily and quickly.

In the drawings, Figure 1 represents by an elevation and partial section a rocket and the improvement connected therewith. Fig. 2 represents a parachute and group of holders suspended as at the time of the signal. Fig. 3 is an end view of the rocket-head, showing some numbered sockets and some shells in place; and Fig. 4 is a partial elevation and longitudinal section of the stem and socket and removable interchangeable shell of colored fire.

a represents the shell, preferably of paper, to receive the colored fire and having at one end a cap *a'*.

b represents the stem, tied near one end to the string depending from the parachute D and having at the other end a socket *b'*. The cap *a'* slips within the socket *b'* in connecting the parts, and I prefer to make said parts of sheet metal to screw together, as shown in the drawings.

I have shown five stems and sockets, and the end faces *c* of the stems within the sockets are to be numbered consecutively from one up, the numbers being painted or stenciled on or printed on slips pasted on.

I have shown the rocket-body B containing the powder and part of the stick C as connected therewith, and the head B' is removably connected to the body B by a screw-coupling 4. The rocket-head B' receives the parachute, its strings and the stems *b*, and their sockets *b'*, the stems and sockets being placed side by side in the same horizontal plane with a packing P of yielding material to keep them in place and prevent fire communicating to the parachute or strings.

The ends of the sockets are all exposed at the coupling 4 for the reception of the shells of colored fire and their numbers are visible. If the signal to be given is red, yellow, white, green, and blue, the shell having the red fire is connected with No. 1 socket, the yellow with No. 2 socket, and so on in rotation. As these parts are separable and interchangeable any arrangement of the five colors can be made according to the signal to be given, and any desired number of stems and sockets may be connected to the parachute-string and be con-

tained in a rocket or equivalent device for elevating and delivering the signal apparatus in air. These groups of interchangeable colored fires are adapted for use as signals in times of peace and war from forts and fields, but particularly from vessels at sea as a means of communicating with one another by a well-recognized code of color-signals.

The shells may each have a stem or fuse for igniting the colored-fire powder, or the explosion of the rocket may ignite the colored-fire composition. The upper end B² of the rocket-head B' should be only a cap or cover that is easily blown off when the parachute and fire are projected.

I claim as my invention—

1. In combination with a rocket or similar pyrotechnic device for rising in air, a parachute and its strings and a series of stems and sockets connected therewith, and a group of similar interchangeable shells for colored fires slipping into said sockets, substantially as set forth.

2. In combination with a rocket or similar pyrotechnic device for rising in air, a parachute and its strings and a series of stems and screw-threaded sockets connected therewith, and a group of similar interchangeable shells for colored fires, each comprising a stem and screw-threaded cap, the caps connecting with the sockets, substantially as set forth.

3. In combination with a rocket or similar pyrotechnic device for rising in air, a parachute and its strings and a series of stems and sockets connected therewith, the bases of the sockets being numbered consecutively, and a group of similar interchangeable shells for

colored fires, each comprising a stem and cap, the caps connecting with the sockets and the parts operating substantially in the manner and for the purposes set forth.

4. In combination with means for elevating a signal into the air, a series of stems and means for connecting them at suitable distances apart, and colored-fire shells and socket connections to the stems, whereby the colored fires can be connected in any desired order to the stems in giving signals, substantially as specified.

5. In combination with the parachute and signal-fire holders, a separable rocket-head and a screw connection therefrom to the rocket-body to give access to the colored-fire holders, and to securely hold the cap to the body of the rocket, substantially as specified.

6. The combination with the combustible signals, devices for holding such signals in a given order, and a parachute connected to the same, of a rocket for elevating such signals having a removable head for receiving and holding the signals and an easily-separable cap to the head, and yielding material as a packing in the head between the combustible signals and the parachute to protect the latter as the signals and parachute are projected from the head, substantially as set forth.

Signed by me this 29th day of January, 1898.

HENRY J. PAIN.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.